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Serial No. 10/525,631

Atty. Doc. No. 2002P09821WOUS

Amendments To The Claims:

Please amend the claims as shown.

1 – 8 (canceled)

9. (Currently amended) An electrically controlled optical add-drop multiplexer, comprising:

an optical waveguide;
a multiplexer;
a demultiplexer;
an optical filter;
a micro-electrical-mechanical system; and
an optical amplifier,

wherein the optical components and electrical components for controlling the add-drop multiplexer the multiplexer, the demultiplexer, the optical filter, the micro-electrical-mechanical system and the optical amplifier are arranged on a multilayer printed circuit board comprising at least one electrically insulating layer, at least one electrically conductive conductor path on an upper surface of the at least one electrically insulating layer to which the optical add-drop multiplexer is electrically connected, at least one optical layer beneath the at least one electrically insulating layer, a connecting opening formed within the at least one optical layer, an optical coupling element within the connecting opening whereby the optical add-drop multiplexer is oriented above the optical coupling element so that an optical signal exiting the optical add-drop multiplexer is redirected by the optical coupling element to an optical waveguide formed within the at least one optical layer with electrical and optical conductor paths.

10. (Previously presented) The add-drop multiplexer according to Claim 9, wherein a layer of the multilayer printed circuit board has both optical and electrical conductor paths.

11. (Previously presented) The add-drop multiplexer according to Claim 9, wherein the multilayer printed circuit board has organic and inorganic materials.

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12. (Previously presented) The add-drop multiplexer according to Claim 9, wherein the multilayer printed circuit board has organic or inorganic materials.

13. (Previously presented) The add-drop multiplexer according to Claim 9, the optical conductor paths are made of glass and polymers.

14. (Previously presented) The add-drop multiplexer according to Claim 9, the optical conductor paths are made of glass or polymers.

15. (Previously presented) The add-drop multiplexer according to Claim 9, wherein the optical conductor paths are fashioned from an element from the group consisting of: glass, silicon oxide, silicon dioxide, and polymer.

16. (Previously presented) The add-drop multiplexer according to Claim 9, wherein the optical conductor paths have three-dimensional optical structures such that two optical conductor paths arranged in different layers of the multilayer printed circuit board are connected to one another.

17. (Previously presented) The add-drop multiplexer according to Claim 9, the optical conductor paths contain a doping.

18. (Previously presented) The add-drop multiplexer according to Claim 9, wherein the add-drop multiplexer further comprises; an electro-optical device, an opto-electrical device, and an optical device.

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19. (New) An electrically controlled electro-optical device comprising:
an optical side connected optically to an optical coupling element positioned within a connecting opening formed within an optical layer of a multi-layer printed circuit board, the electro-optical device being electrically connected with at least one electrically conductive path formed on an electrically insulating layer of the multi-layer printed circuit board positioned above the optical layer whereby an optical signal exiting the electro-optical device is redirected substantially orthogonally by the optical coupling element to an optical waveguide formed within the optical layer of the multi-layer printed circuit board.